

ZON ELECTRA

Electronic Scare Cannon



Operating Instructions

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GENERAL

This fully electronic propane gas cannon is developed to scare away birds and wildlife for farms, airports, industry and more.

The only moving part on this cannon is the valve which controls the gas flow.

It is able to produce 1, 2, 3 or 4 shot series with approximately 5 seconds between each shot.

The time interval between consecutive series can be configured electronically from 1 to 60 minutes. Two different random modes are available, which allows the cannon to randomly select different time intervals after each series.

This cannon is equipped with a 24-hour clock. Up to four on-off cycle intervals can be configured in a 24-hour period.


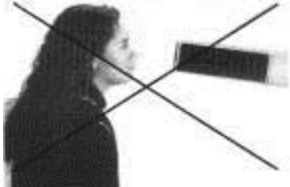

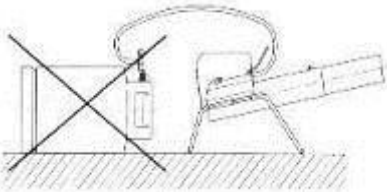



ZON ELECTRA RECOMMENDATIONS

Read the following information carefully. In it you will find important instructions concerning the safety and maintenance of the device. Always keep these instructions with the device.

1. It is important to move the device regularly in order to increase its effectiveness.
2. If the device functions inadequately, consult the failure table on page 13, or your local dealer.
3. Consult your dealer for accessories.
4. The device has certain components which can only be repaired or set by a recognized dealer.

Always wear ear-protection near cannons in operation!

WARNING

	<ul style="list-style-type: none"> - Wear ear protection while operating the cannon (sound pressure level is approximately 128dB(A) LOUD when measured perpendicular to the end of the megaphone at 5 meter's distance). - Observe the local requirements and rules that may apply to noise and the production of sound in the vicinity of a residential area or otherwise.
	<ul style="list-style-type: none"> - Never look into the megaphone - Never place objects in the megaphone. - Do not place any heavy objects on the scare cannon and do not block the air circulation.
	<ul style="list-style-type: none"> - Do Not Smoke near cannon. - Keep the scare cannon and gas cylinder away from heat sources.
	<ul style="list-style-type: none"> - The gas cylinder should be placed upright. - Never place the gas cylinder in a pit. - Only propane (LP Gas) or butane gas may be used, preferably propane. Do not use any other types of gas.
	<ul style="list-style-type: none"> - Never use the cannon indoors.
	<ul style="list-style-type: none"> - If there is a fire: <ul style="list-style-type: none"> a. try to close the valve on the gas cylinder; b. extinguish fire with dry-chemical (powder type) extinguisher.
	<ul style="list-style-type: none"> - Clear area surrounding gas cylinder and Zon Electra of all debris, flammable and combustible materials. - Place the cannon on a stable and horizontal surface. - Clean or replace the solenoid valve after 150kg of gas usage. - Replace the gas hose every two years.

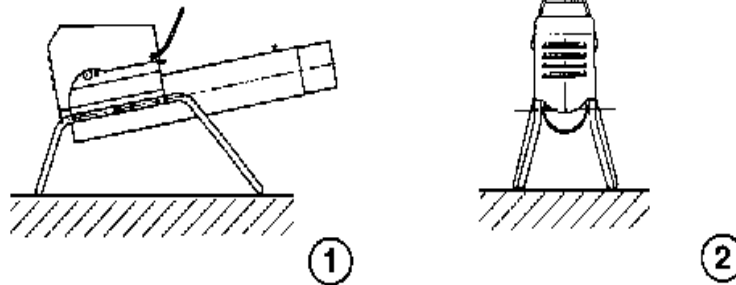
CONTENTS OF THE BOX:

1. Fully electronic gas cannon with pressure regulator and hose fracture protection valve.
2. Left base frame
3. Right base frame
4. Bag with 4 butterfly nuts, 4 caps and a user manual

Needed, but not included, is a 12V power source (12V car battery) and a propane tank.

INSTALLATION

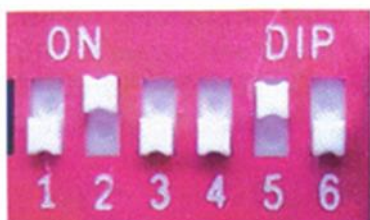
1. Insert the 4 caps into the open ends of the left and right base frames.
2. Attach the left and right base frames to the cannon using the 4 butterfly nuts. Right (R) and Left (L) are marked at the centre of the base frames. After attaching the frames, the megaphone should be pointing slightly upwards.
3. Connect the pressure regulator to the gas tank. Make sure that the connections are clean and dry. Also check that the regulator has a sealing ring (fitted with a female thread) and that the ring is clean.
4. Tighten the coupling nut (counter-clockwise) on the gas tank. Never use force when assembling the device.
5. Connect the battery cable of the cannon to a 12V power source. The red or brown wire should be attached to the positive (+) end of the battery. The blue wire should be attached to the negative (-). When attached properly, a red control will light up to show that the device is active. Check the connections if this does not occur. Use care when closing the lid, making sure not to pinch the power cable between the lid and bridge (this can damage the cable causing a short). This cannon consumes 0.53 ampere per day. A fully charged car battery of 30Ah will operate this cannon for approximately 60 days; a 7.2 Ah battery for approximately 14 days.
6. Put the battery preferably above the ground on an elevated spot and protect it from rain and extreme heat. The electronics are splash waterproof and heat resistant to at least 190°F/70°C.
7. The cannon is now ready for timer programming.



8. Open the valve on the propane tank only after the cannon is configured. **After opening the valve on the gas tank, always push the red button on the regulator, this allows the gas to flow to the cannon.** This is a safety feature which automatically stops the flow of propane if the hose is cut. The red button has to be pressed (reset) every time pressure is lost in the hose.

OPERATION

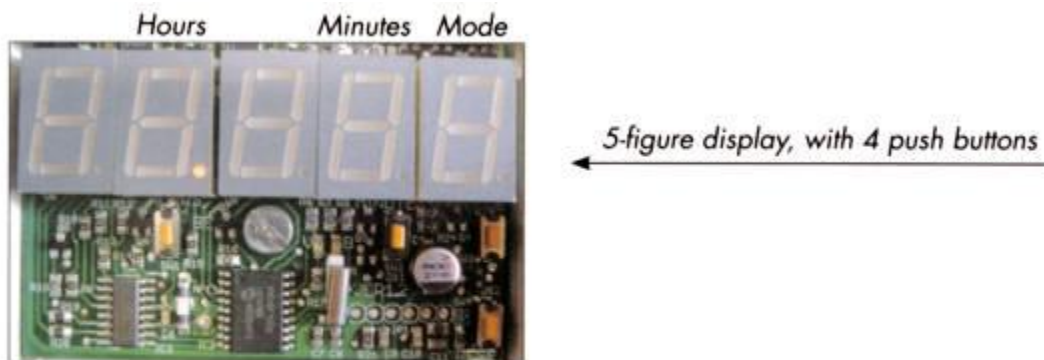
The number of shots in a series and the time interval between consecutive series are configured with DIPSWITCHES. There are 6 white switches located in the red block, numbered 1 to 6 (as pictured below). Dipswitches 1 and 2 are used for setting the number of shots in a series, and dipswitches 3 to 6 are used for setting the time interval between consecutive series.



Block with 6 dipswitches

A dipswitch is ON when it is pushed fully to the ON-side of the red block. A dipswitch is OFF when it is pushed fully to the side with the numbers 1 through 6. In picture to the left, dipswitches 2 and 5 are ON, the others are OFF. This configuration will produce 3 shots in a series and 7 minutes between series. **The cannon is shipped from the factory with these settings.**

The current time and on-off settings can be configured with the 5-digit display and the 4 small yellow pushbuttons. All times are in a 24-hour clock with 00:00 as 12 o'clock midnight. The “Hours” and “Minutes” pushbuttons are used to enter time settings. The “Mode” pushbutton is used to select the on-off periods. The “Reset” pushbutton is used to clear settings.



Pushbutton Hours



Pushbutton Minutes



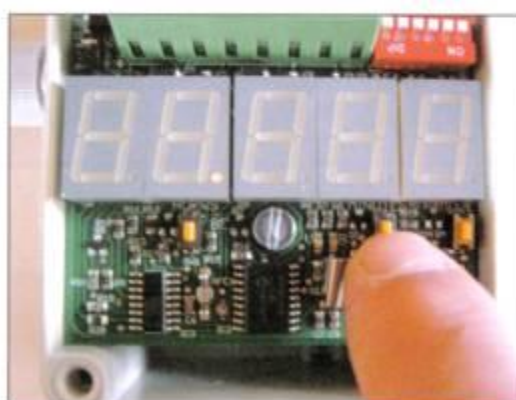
Pushbutton Mode



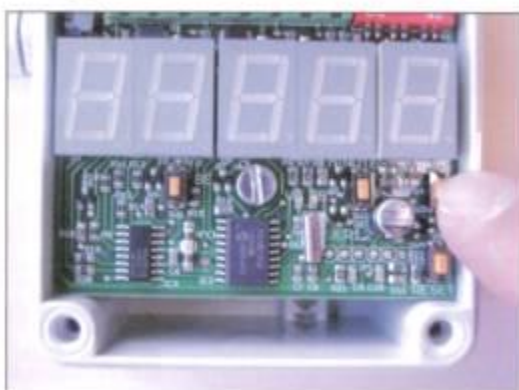
Pushbutton Reset



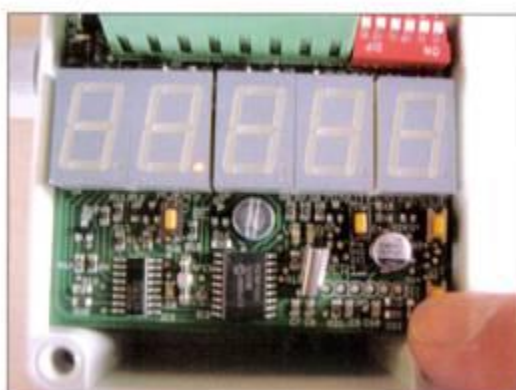
Setting hours



Setting minutes







Selecting Mode



Reset

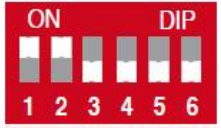

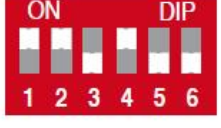
CONFIGURING THE NUMBER OF SHOTS IN A SERIES.

The cannon can be configured to produce 1, 2, 3, or 4 shots in a series with approximately 5 seconds between each shot. The number of shots in a series is controlled with dipswitch 1 and 2.




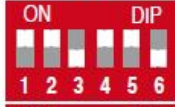

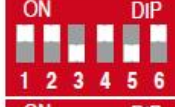




Series	Dipswitch 1	Dipswitch 2	
1 shot	Off	Off	
2 shots	On	Off	
3 shots	Off	On	
4 shots	On	On	

CONFIGURING THE TIME BETWEEN CONSECUTIVE SERIES

The time that has to pass between consecutive shot series is controlled with dipswitches 3 through 6. These are the possible settings:

Interval	Dipswitch 3	Dipswitch 4	Dipswitch 5	Dipswitch 6	
1 minute	Off	Off	Off	Off	
2 minutes	On	Off	Off	Off	
3 minutes	Off	On	Off	Off	

CONFIGURING THE TIME BETWEEN CONSECUTIVE SERIES

Interval	Dipswitch 3	Dipswitch 4	Dipswitch 5	Dipswitch 6	
5 minutes	On	On	Off	Off	
7 minutes	Off	Off	On	Off	
10 minutes	On	Off	On	Off	
13 minutes	Off	On	On	Off	
16 minutes	On	On	On	Off	
20 minutes	Off	Off	Off	On	
25 minutes	On	Off	Off	On	
30 minutes	Off	On	Off	On	
45 minutes	On	On	Off	On	
60 minutes	Off	Off	On	On	
Random 10	On	Off	On	On	
Random 20	Off	On	On	On	
On Demand	On	On	On	On	

Random 10: The time after a shot series is randomly chosen by the cannon between 1 and 10 minutes..

Random 20: The time after a shot series is randomly chosen by the cannon between 1 and 20 minutes.

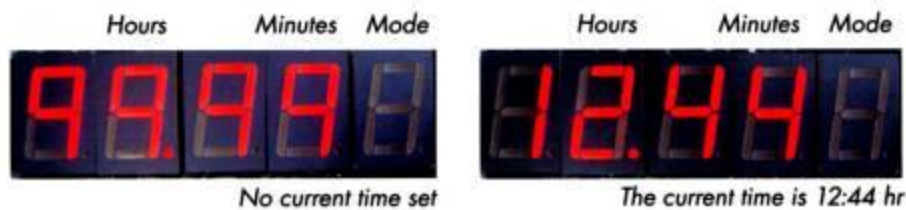
On Demand: The cannon can only activated by the operator using either push button or radio remote control.

SETTING THE CURRENT TIME

The 5-digit display is normally not lit. Pushing one of the push buttons for the Hours, Minutes, or Mode will light the display and show the current time.

When the display is lit, the current time is displayed if the Mode display is empty. When the Mode display shows a number (1 through 8), it does not show the current time but instead, one of the starting or ending-times. To show the current time, push the Mode button several times until the Mode display is empty. Now it shows the current time which can be set or changed.

If no current time is set, the hours and minutes both contain the value 99. The current time is a continuously changing value that can't be stored in memory. After each power interruption, the current time will contain 99:99. When no current time is set, the cannon will operate continuously regardless of the periods of operation being set.



By pushing the Hours button or the Minutes button, the time setting is changed. Keeping the button pushed down will speed-up the changing of hours or minutes.

By pushing the Reset button for one second, the current time will be set to 00:00, which is 12 o'clock midnight.

The current time does not have to be confirmed by pushing the Mode button again, as it is not stored automatically into memory.

SETTING STARTING-TIMES AND ENDING-TIMES

Four periods can be set by means of a starting-time and ending-time, for a 24-hour period. During these periods, the scare cannon will operate according to the chosen configuration. Outside of these periods, it will do nothing.

To set or change a starting or ending-time, the time you want to set or change has to be displayed first. Push the Mode button repeatedly until the value in the Mode display is the time you want to modify.

Mode = 1 Starting-time period 1
Mode = 2 Ending-time period 1
Mode = 3 Starting-time period 2
Mode = 4 Ending-time period 2

Mode = 5 Starting-time period 3
Mode = 6 Ending-time period 3
Mode = 7 Starting-time period 4
Mode = 8 Ending-time period 4





By pushing the Hours or the Minutes button, the displayed starting or ending-time can be altered. Keeping the button pushed down will speed-up the changing of hours or minutes.

By holding the reset button for 1 second, the display will be set to 00:00, which is 12 o'clock midnight. Once the time is set, it has to be activated and written to memory by pushing the Mode button again. In the event of a power interruption, the cycle interval times will remain in memory.

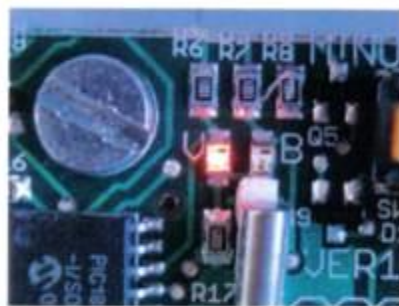
Not all 4 periods have to be set, you only have to set the ones you want. If no period is set, all starting and ending-times contain the value 00:00, this will operate the cannon continuously according to the dipswitch settings.

IN OPERATION

When everything is installed and configured, the cannon will operate according to the programmed settings. Once the cannon is connected to power, a shot series will start. Do not open the gas valve on the gas tank until you have finished configuration.

After opening the gas valve on the gas tank, always push the red button on the hose fracture protection valve to make sure an unobstructed gas flow is guaranteed.

On the circuit board of the cannon, you'll find 2 LED's. The LED with the character V beside it, will light during the time gas is injected into the cannon. The led with the character B beside it, will light when the electronic ignition is activated. **Be careful, this is the moment of the explosion!**



Led V (open gas valve)



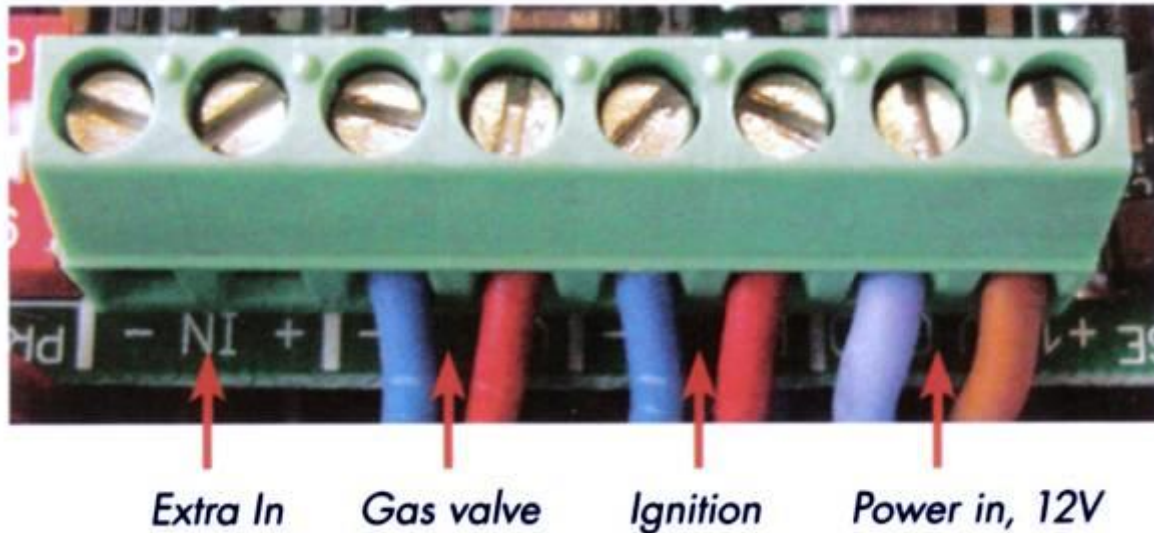
Led B (ignition)

When the cannon is powered on and the display is not lit, pushing the reset button will light the display and show the remaining time until the next shot series. This time is descending and will be shown for 15 seconds.

During the time the display is lit, the cannon will not produce shots. Pay attention, however, if the display should turn to "unlit" a time interval to the next series has passed, as the cannon will start firing the next series of shots immediately.

CONNECTIONS ON THE PCB (PRINTED CIRCUIT BOARD).

Four inputs are provided on the PCB, three are used from the factory.



“Power in” is used for the connection of a 12V battery. The “Ignition” input is used to connect the electronic ignition of the cannon. The magnetic valve that controls the flow of gas is connected to the “Gas Valve” input.

The “Extra IN” input, is used for the connection of optional equipment, such as a wired or a wireless remote control. When equipment is connected to the + and - of this input and short-circuits these, the cannon will immediately begin firing the configured number of shots regardless of the periods of operation being set.

ON-DEMAND MODE

To operate the Electra in “on demand mode” only (cannon can only activated by the operator using either the corded push button or wireless radio remote control) using the “extra in”. Dip switches #3, #4, #5, and #6 must all be set to the “On” position.

ZON ELECTRA ROUTINE MAINTENANCE

- When not in use, store in a dry place.
- All nuts, bolts, and screws should be tightened occasionally as the explosion causes vibrations which can cause these connectors to loosen.
- Check the following at least once per year;
 1. Check the gas hose for defects. If defects are found (porous/cracks), replace it with a new one. When in doubt, use a new hose.
 2. Check the gas regulator and hose fracture protector, for damage or leaks. If any problems are detected, repair or replace immediately.
 3. If there are any defects in the battery cable, repair or replace it.
 4. Check the electrode (No. 91536) for damage. If any defects are detected replace with new electrode.
 5. **Check electrode and ground wire on back of barrel for corrosion or residue build-up.** Remove and clean with emery cloth. See appendix #1 for complete details.
 6. Use a suitable multi-meter to check whether the DC source (battery) has enough power (minimum 10 volts). If the battery requires charging, be sure to follow the manufacturer’s instructions carefully.
 7. If other defects are detected consult your local dealer.

PARTS LIST

Frame

91106 Outer Megaphone
91116 Clamping Bolt
91136S Rear Cover
91146 Iris Cover
91156 Inner Megaphone
91606 Cover
91616 Handle
91636 Left Base Frame
91646 Right Base Frame
91656 Cap
91816 Clamp
VM6 Butterfly Nut M6
M630ZK Metal Screw M6x30
M610PH Metal Screw M6x10
M6 Hexagonal Nut M6

Main Body with Control Unit

12108 Main Body
12308A Control Unit Enclosure
Bottom
12308B Control Unit Enclosure
Transparent Top
12308C Cord Grip
9093 Electra Control Unit
(Complete)
12508 Electra Printed Circuit
Board
12518 Pedestal For PCB
12708 Battery Cable
91816 Clamp
Battery Clips Positive & Negative Clips
LK6 Small Hose Clamp
M610PH Metal Screw M6 x 10
M410CK Metal Screw M4 x 10
M3595Z Metal Screw M3.5 x 9.5
M6 Hexagonal Nut M6

Gas Valve

12408A... Solenoid Valve Main Body
12408B... Coil
12408C... Nut For Solenoid Valve
12408D... Injector Nozzle
12408E... Nut M12
9043 Gas Valve Complete
12408F... Gas Tube Aluminum
12408G .. Union Nut
12408H... Cutting Ring
12408J ... Coupler For Solenoid Valve
12408K... Filter
12408L ... Supply Nipple
12748 Blue Wire, 22cm For Valve
12758 Red Wire, 22cm For Valve

Ignition

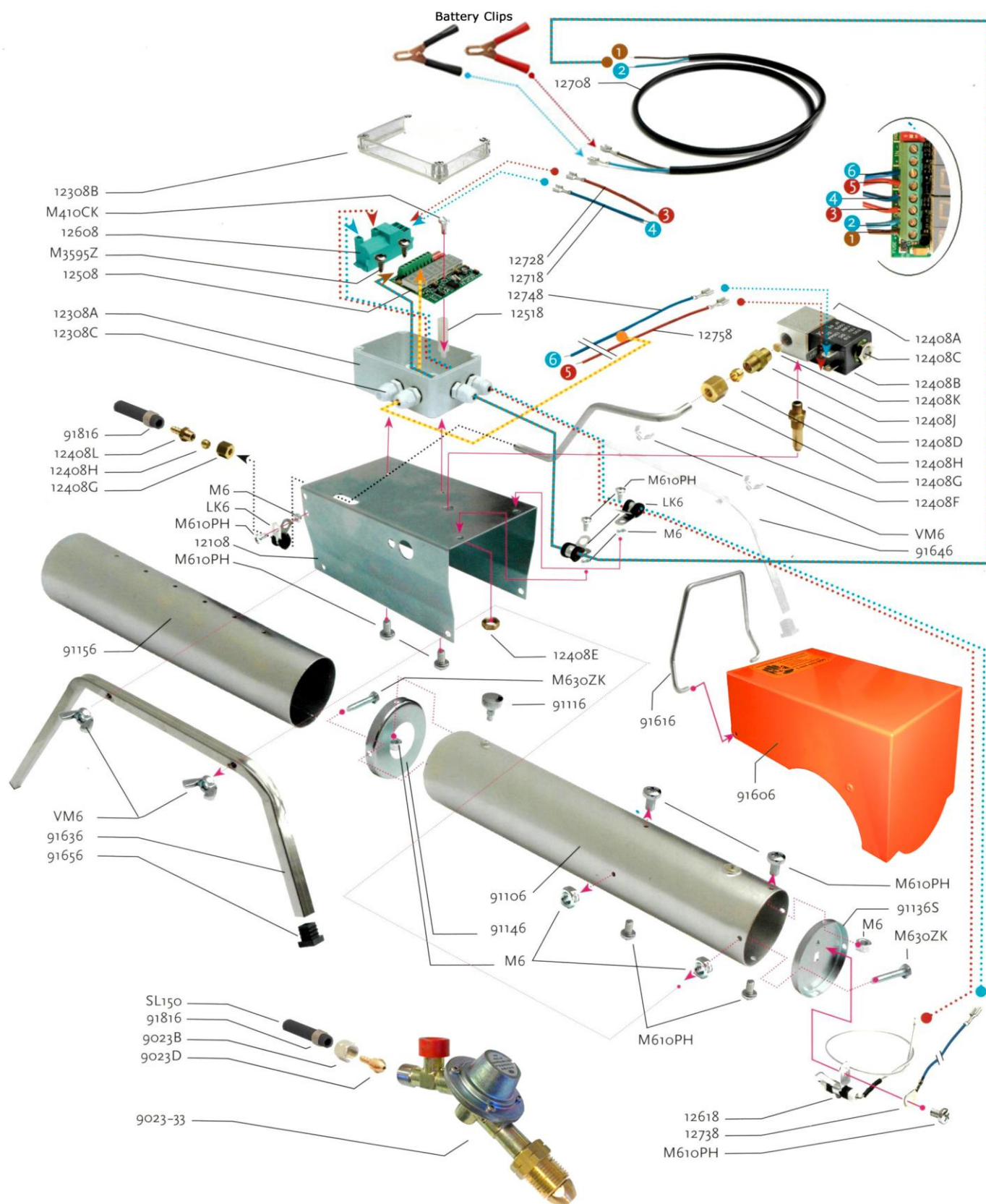
12608 Ignition Module
12618 Electrode
12718 Blue Wire, 10cm For Ignition
12728 Red Wire, 10cm For Ignition
12738 Blue Wire, 30cm For Ignition

Ground Wire... Ground Wire For Electrode
M610PH Metal Screw M6 x 10

Gas Regulator Complete

011 Protective Cover
9023-33 Complete Regulator Unit with HFP
9023B Nut 3/8"
9023D Nipple
91816 Clamp
SL100 Hose 150 cm

ZON ELECTRA



ELECTRA TROUBLESHOOTING

FAILURE	CAUSE	REMEDY
The cannon is fully connected and fails to operate at all	The battery cable has not been connected properly. Low battery.	Ensure the battery terminals are connected properly. The black terminal is negative and the red terminal is positive. Recharge or connect a new battery.
The Electra operates, but there is no explosion or sound	The gas tank valve is not open. The gas tank is empty or does not have enough pressure. The hose fracture protector button (red) has not been pushed. Poor gas mixture. Gas valve is blocked or partially blocked. Ignition gives a weak spark or no spark at all. The gas valve will not operate. Faulty Electrode. Debris in combustion chamber Cobweb / Spider Nest	Open the gas valve. Fill or replace gas tank. Push the red button on the hose fracture protector one or more times. Gas mixture in the gas tank is not correct, replace gas tank. Open up blockage using thin wire of approx. 0.6 mm diameter or welding tip cleaner. Check the electrode, No. 91536. It is possible that the porcelain base is broken: if so, replace. Corrosion on the connection points between the electrode and the barrel or the ground wire and the barrel. Remove electrode and ground wire and clean all contact points with emery cloth. Electrode No. 91536 is wet: Dry it well. Check the connection points. If properly connected, call the dealer for repair. Replace electrode. Remove debris such as a mouse nest from inside the cannon. Remove the blockage from the hole in the top of the cannon where the gas enters.
The Electra works, but gives dull explosions	Wind is too strong; gas/air mixture is disturbed. Gas valve is partially blocked.	Place the Zon Electra down wind or place it out of wind or behind a screen. Open up blockage using thin wire of approx. 0.6 mm diameter or welding tip cleaner.
Leaks	The coupling nut on the gas regulator is not tight enough. The hose from the regulator to the Electra has been damaged.	Tighten coupling nut. Replace the hose.

Detailed videos covering all the above troubleshooting can be found under the product support section on www.margosupplies.com

APPENDIX 1 - CLEANING ELECTRODE AND GROUND WIRE



Figure 1. Corrosion of rear cover and electrode. Remove electrode from rear cover.



Figure 2. Corrosion of rear cover and ground wire. Remove ground wire from rear cover.

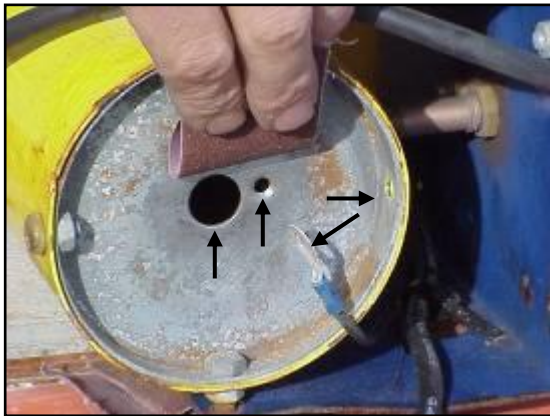


Figure 3. Cleaning points. Use emery cloth or similar material to remove any rust or corrosion from these key points.



Figure 4. Corrosion on electrode. Use a wire brush, emery cloth or similar abrasive material to remove corrosion from point where electrode contacts the rear cover.



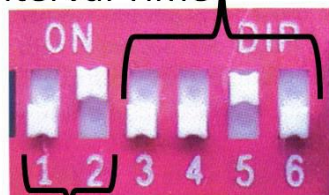
Figure 5. Clean contact points.

Read User Manual Before Operating

Interval Time Settings

Interval	Dipswitch #3	Dipswitch #4	Dipswitch #5	Dipswitch #6
1 Minute	Off	Off	Off	Off
2 Minutes	On	Off	Off	Off
3 Minutes	Off	On	Off	Off
5 Minutes	On	On	Off	Off
7 Minutes	Off	Off	On	Off
10 Minutes	On	Off	On	Off
13 Minutes	Off	On	On	Off
16 Minutes	On	On	On	Off
20 Minutes	Off	Off	Off	On
25 Minutes	On	Off	Off	On
30 Minutes	Off	On	Off	On
45 Minutes	On	On	Off	On
60 Minutes	Off	Off	On	On
Random 10	On	Off	On	On
Random 20	Off	On	On	On
On Demand	On	On	On	On

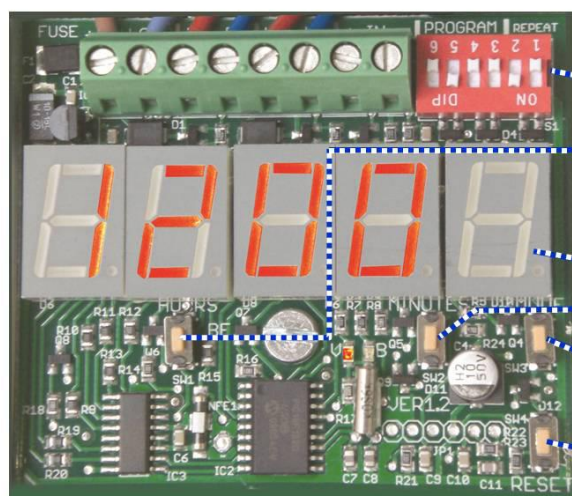
Interval Time



Number of Shots

Number of Shots Settings

Series	Dipswitch #1	Dipswitch #2
1 Shot	Off	Off
2 Shots	On	Off
3 Shots	Off	On
4 Shots	On	On



Set Number of Shots & Interval

Set Hours Button

Mode Display

Set Minutes Button

Mode Button

Reset Button

Setting Clock: When mode display is blank, press the “hours” & “minutes” buttons.

Setting Starting or Ending Times: Press the “mode” button repeatedly until the value in the Mode display is the period you want to modify. Then press the “hours” and “minutes” buttons. Once the time is set, it has to be activated and written to memory by pushing the Mode button again.

By pushing the “reset” button for one second, the current time will be set to 00:00, which is 12 o'clock midnight.



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